

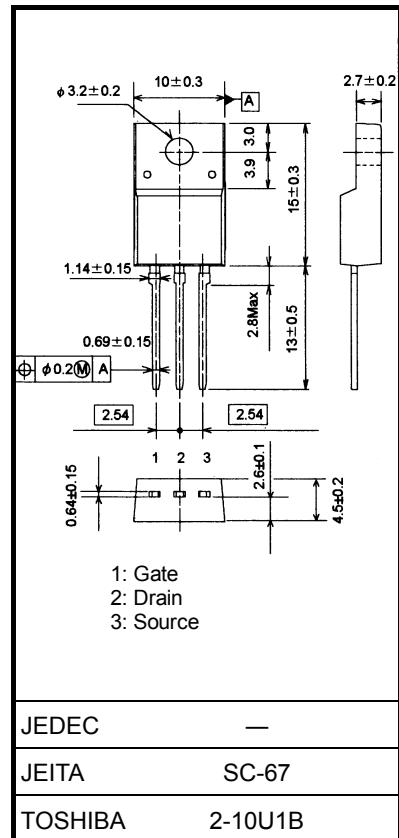
查询"2SK3567 06"供应商 TOSHIBA Field Effect Transistor Silicon N Channel MOS Type (π -MOSVI)

2SK3567

Switching Regulator Applications

Unit: mm

- Low drain-source ON resistance: $R_{DS(ON)} = 1.7\Omega$ (typ.)
- High forward transfer admittance: $|Y_{fs}| = 2.5S$ (typ.)
- Low leakage current: $I_{DSS} = 100\ \mu A$ ($V_{DS} = 600\ V$)
- Enhancement mode: $V_{th} = 2.0\sim4.0\ V$ ($V_{DS} = 10\ V$, $I_D = 1\ mA$)



Absolute Maximum Ratings ($T_a = 25^\circ C$)

Characteristics	Symbol	Rating	Unit
Drain-source voltage	V_{DSS}	600	V
Drain-gate voltage ($R_{GS} = 20\ k\Omega$)	V_{DGR}	600	V
Gate-source voltage	V_{GSS}	± 30	V
Drain current	DC (Note 1)	I_D	3.5
	Pulse ($t = 1\ ms$) (Note 1)	I_{DP}	14
Drain power dissipation ($T_c = 25^\circ C$)	P_D	35	W
Single pulse avalanche energy (Note 2)	E_{AS}	201	mJ
Avalanche current	I_{AR}	3.5	A
Repetitive avalanche energy (Note 3)	E_{AR}	3.5	mJ
Channel temperature	T_{ch}	150	$^\circ C$
Storage temperature range	T_{stg}	-55~150	$^\circ C$

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings. Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Thermal Characteristics

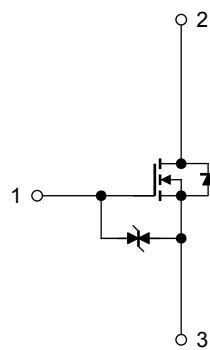
Characteristics	Symbol	Max	Unit
Thermal resistance, channel to case	$R_{th}(ch-c)$	3.57	$^\circ C/W$
Thermal resistance, channel to ambient	$R_{th}(ch-a)$	62.5	$^\circ C/W$

Note 1: Ensure that the channel temperature does not exceed 150°C.

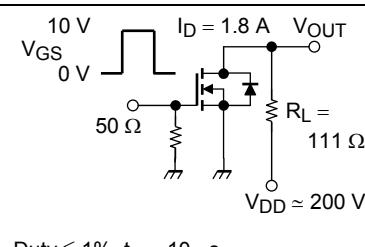
Note 2: $V_{DD} = 90\ V$, $T_{ch} = 25^\circ C$ (initial), $L = 28.8\ mH$, $I_{AR} = 3.5\ A$, $R_G = 25\ \Omega$

Note 3: Repetitive rating: pulse width limited by maximum channel temperature

This transistor is an electrostatic-sensitive device. Please handle with caution.



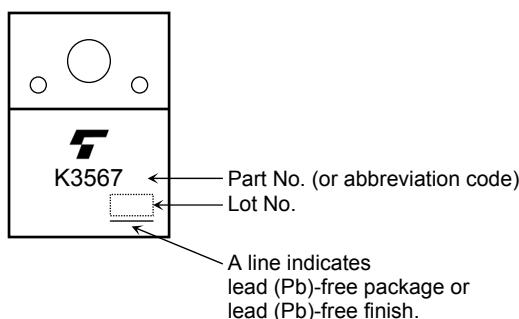
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Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit	
Gate leakage current	I_{GSS}	$V_{GS} = \pm 25 \text{ V}$, $V_{DS} = 0 \text{ V}$	—	—	± 10	μA	
Gate-source breakdown voltage	$V_{(BR)GSS}$	$I_G = \pm 10 \mu\text{A}$, $V_{DS} = 0 \text{ V}$	± 30	—	—	V	
Drain cut-off current	I_{DSS}	$V_{DS} = 600 \text{ V}$, $V_{GS} = 0 \text{ V}$	—	—	100	μA	
Drain-source breakdown voltage	$V_{(BR)DSS}$	$I_D = 10 \text{ mA}$, $V_{GS} = 0 \text{ V}$	600	—	—	V	
Gate threshold voltage	V_{th}	$V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$	2.0	—	4.0	V	
Drain-source ON resistance	$R_{DS}(\text{ON})$	$V_{GS} = 10 \text{ V}$, $I_D = 1.8 \text{ A}$	—	1.7	2.2	Ω	
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = 10 \text{ V}$, $I_D = 1.8 \text{ A}$	0.7	2.5	—	S	
Input capacitance	C_{iss}	$V_{DS} = 25 \text{ V}$, $V_{GS} = 0 \text{ V}$, $f = 1 \text{ MHz}$	—	550	—	pF	
Reverse transfer capacitance	C_{rss}		—	6	—		
Output capacitance	C_{oss}		—	60	—		
Switching time	Rise time	t_r	 V_{GS} 10 V V_{GS} 0 V 50Ω $I_D = 1.8 \text{ A}$ V_{OUT} $R_L = 111 \Omega$ $V_{DD} \approx 200 \text{ V}$ Duty $\leq 1\%$, $t_W = 10 \mu\text{s}$	—	12	—	ns
	Turn-on time	t_{on}		—	45	—	
	Fall time	t_f		—	13	—	
	Turn-off time	t_{off}		—	80	—	
Total gate charge	Q_g	$V_{DD} \approx 400 \text{ V}$, $V_{GS} = 10 \text{ V}$, $I_D = 3.5 \text{ A}$	—	16	—	nC	
Gate-source charge	Q_{gs}		—	10	—		
Gate-drain charge	Q_{gd}		—	6	—		

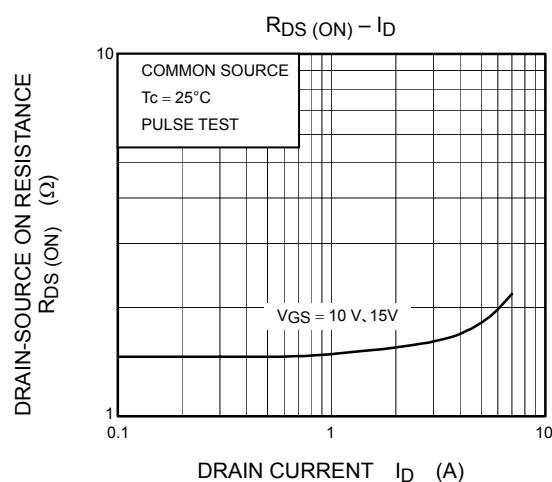
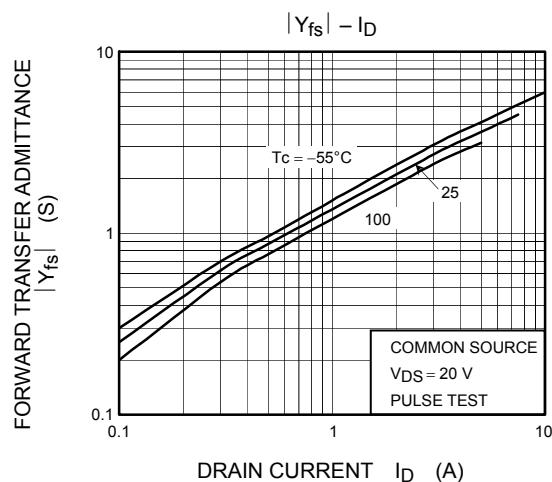
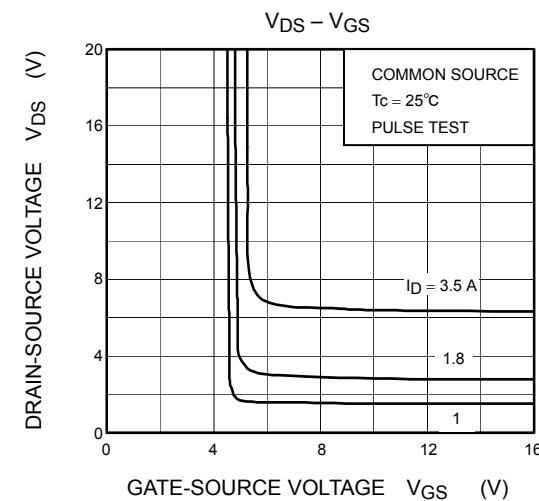
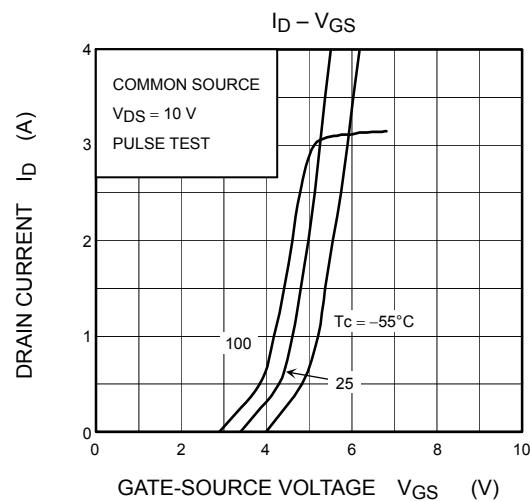
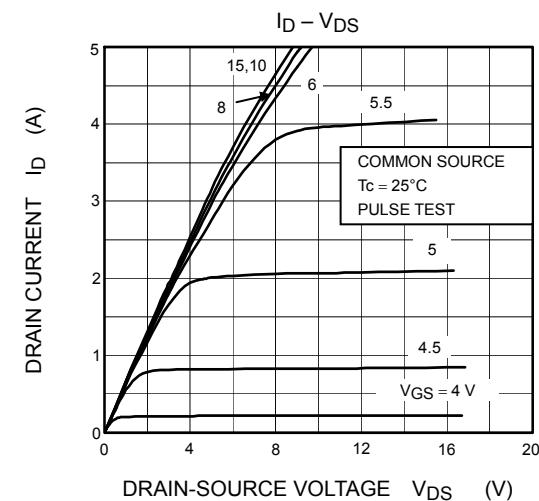
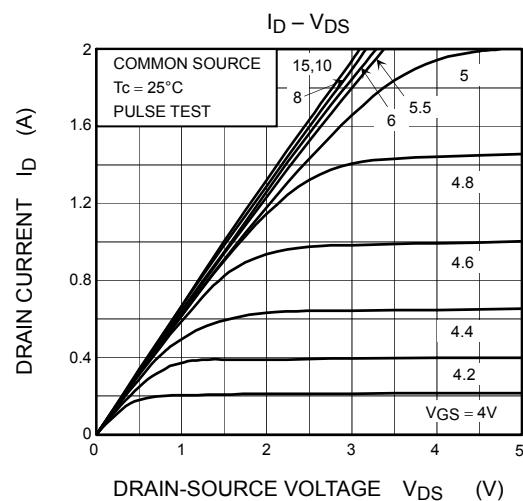
Source-Drain Ratings and Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Continuous drain reverse current (Note 1)	I_{DR}	—	—	—	3.5	A
Pulse drain reverse current (Note 1)	I_{DRP}	—	—	—	14	A
Forward voltage (diode)	V_{DSF}	$I_{DR} = 3.5 \text{ A}$, $V_{GS} = 0 \text{ V}$	—	—	-1.7	V
Reverse recovery time	t_{rr}	$I_{DR} = 3.5 \text{ A}$, $V_{GS} = 0 \text{ V}$, $dI_{DR}/dt = 100 \text{ A}/\mu\text{s}$	—	1400	—	ns
Reverse recovery charge	Q_{rr}		—	9.0	—	μC

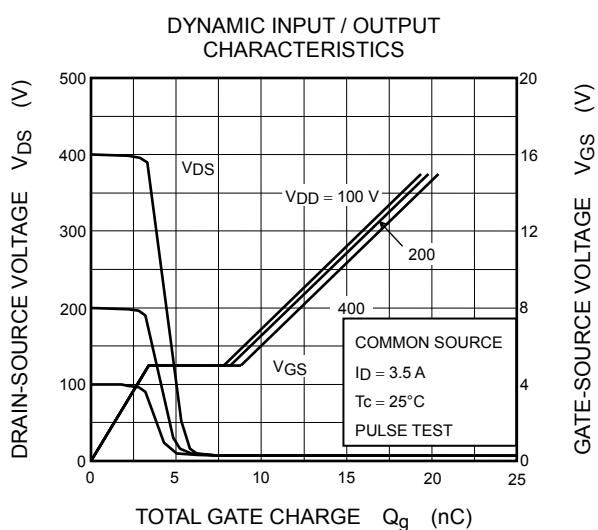
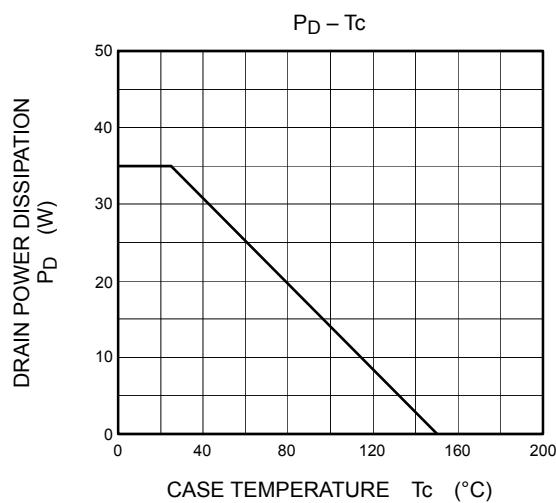
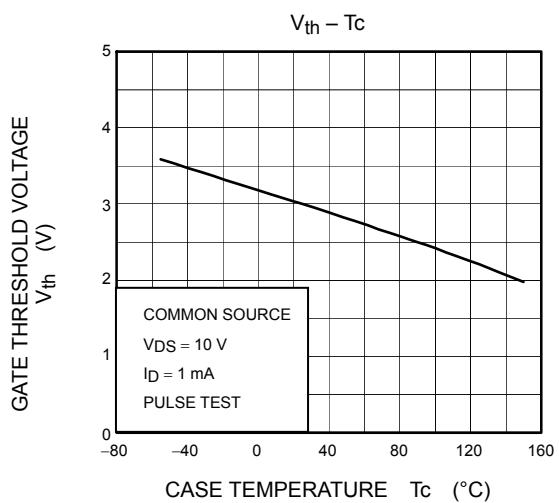
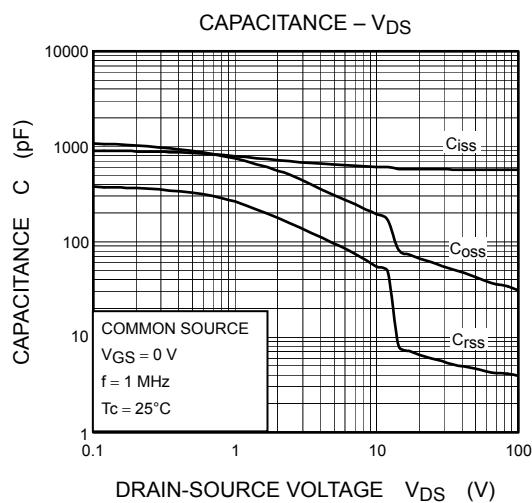
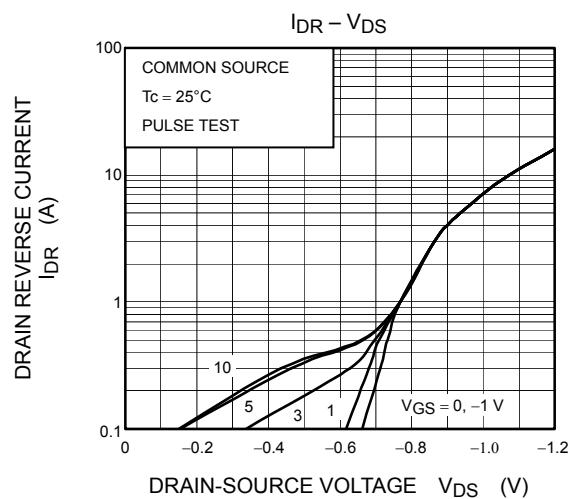
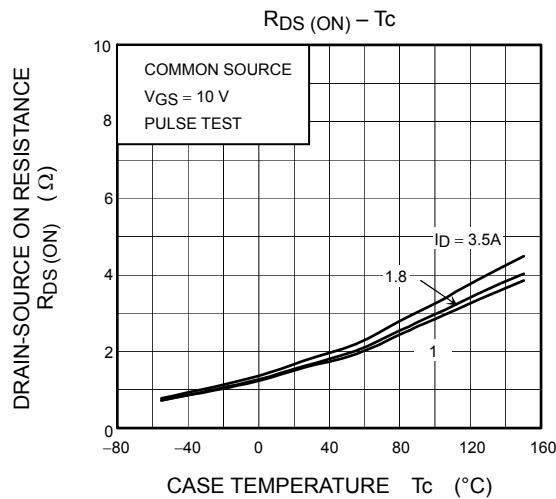
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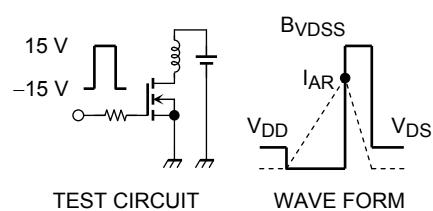
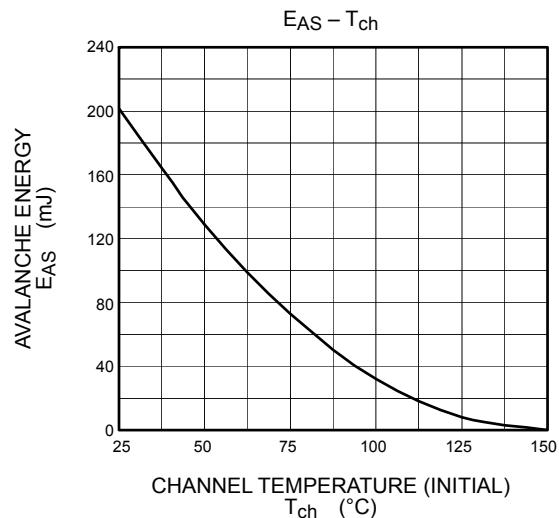
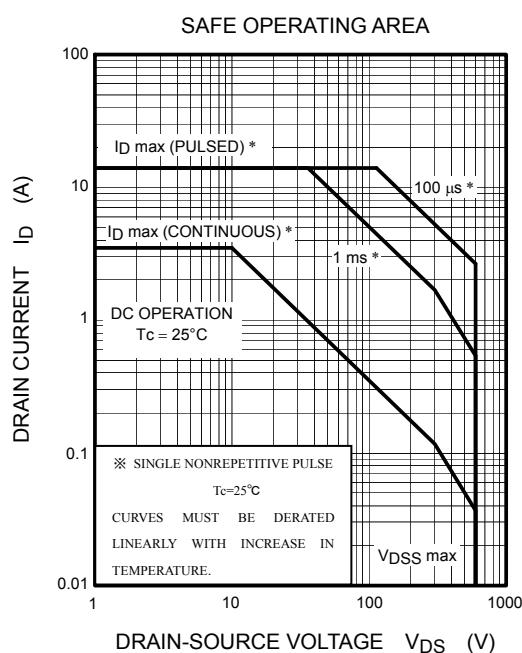
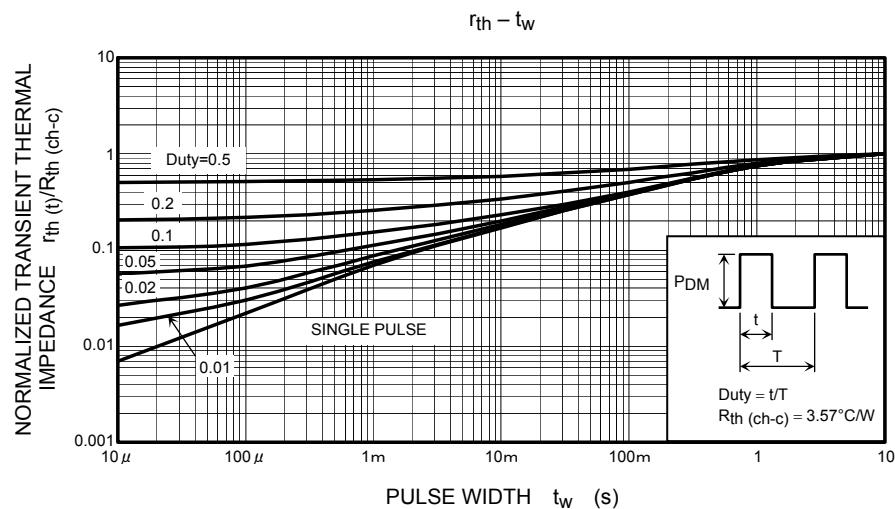
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$$R_G = 25 \Omega$$

$$V_{DD} = 90 \text{ V}, L = 28.8 \text{ mH}$$

$$E_{AS} = \frac{1}{2} \cdot L \cdot I^2 \cdot \left(\frac{B_{VDS}}{B_{VDS} - V_{DD}} \right)$$

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